



LUMINA ISSUE PAPER

HIGH-IMPACT PRACTICES AND GAINS IN STUDENT LEARNING: Evidence from Georgia, Montana, and Wisconsin

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February 2021



Introduction

This report examines the relationship between students' participation in high-impact practices (HIP) and their perceived learning gains, with special attention paid to the nature of these relationships among Black and Hispanic students and among students 25 years or older. In 2018, with support from Lumina Foundation, the National Association of System Heads (NASH) launched an effort with four public college and university systems to demonstrate how a coordinated approach could expand and improve quality implementation of high-impact practices in an equitable manner. In addition to expanding HIP participation for traditionally underserved student groups, a key goal of this effort was to better understand and measure the gains in student learning that can result from participation in well-designed high-impact practices and the extent to which this learning also occurs equitably.

Drawing on National Survey of Student Engagement (NSSE) data involving more than 28,000 students from 15 institutions across three states participating in the Lumina-NASH initiative, this report assesses the benefits associated with participation in various HIPs in terms of students' academic and practical learning. Overall, analyses point to a substantial boost in perceived learning gains for students participating in HIPs, with an especially large benefit associated with participating in service-learning courses involving a community-based project. Participation in HIPs is strongly associated with learning gains for Black and Hispanic students as well as for students 25 years and older. However, analyses suggest that these relationships vary among the different HIPs measured by NSSE.

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Background

“High-Impact Practices”—a term popularized by the Association of American Colleges and Universities (AAC&U) through its Liberal Education and America’s Promise (LEAP) initiative and researched over time by many researchers using data from NSSE and elsewhere—are a set of educational practices that result in higher student engagement.¹ The most well-known HIPs are those promoted by AAC&U that include first-year seminars, common intellectual experiences, learning communities, writing-intensive courses, collaborative assignments and projects, undergraduate research, diversity and global learning, e-portfolios, service learning or community-based learning, internships, and culminating senior experiences or capstone projects.²

For over a decade, researchers have developed a robust evidence base on the benefits of high-impact practices for students in terms of their academic engagement, attainment, and learning outcomes,³ leading many colleges and universities across the country to promote, scale, and even require student participation in HIPs. Importantly, some studies have suggested that HIPs may be particularly beneficial for minoritized students, first-generation students, and other student groups that tend to be underserved within higher education.⁴ However, other studies have called into question the assumption that HIPs benefit all students equally. Some have even raised concerns that HIPs may result in *negative* experiences for minoritized students by creating more opportunities for exposure to racist interactions.⁵

This study builds on previous research by examining the relationship between participation in HIPs and student learning gains, paying attention to variation by HIP type as well as in the nature of the learning gains connected to HIP participation. We explore these relationships for all students as well as for minoritized students and for students 25 and older.

Data and Methods

Data used in the analysis derive from NSSE surveys administered between 2014 and 2020 at 15 four-year institutions in Georgia, Wisconsin, and Montana, and include approximately 28,500 students.⁶

Table 1: **Sample Characteristics, n=28,516**

Gender		Age	
Female	67%	Average age	23
Male	33%	25+	19%
Race/Ethnicity		24 and younger	81%
White	65%	Class	
Black	14%	Freshman	46%
Hispanic	7%	Senior	54%
American Indian	0.4%	First-Generation & Transfer status	
Asian	6%	First-Gen student	47%
Other	6.3%	Transfer student	30%

Table 1 provides descriptive information for the analytic sample. Two-thirds of students in the sample are female. Approximately one-half of those in the sample are classified as freshmen and the other half as seniors. Roughly two-thirds of students are white, 14 percent are Black, 7 percent are Hispanic, and less than 0.5 percent are American Indian or Alaska Native. The average age of students in the sample is 23 years old, with approximately one in five students 25 years or older. Finally, nearly half of students are first-generation, and 30 percent are transfer students.

Measures of HIP Participation

Measures of HIP participation are based on NSSE indicators of participation in six HIPs. NSSE asks student respondents about their participation in the following high-impact practices: learning communities, service-learning courses involving a community-based project, research with faculty, internships or field experiences, study abroad, and culminating senior experiences or capstone projects.⁷

The HIPs that students engage in vary in nature and approach and can therefore be expected to correlate with different types of learning. For example, research with faculty may help students hone their analytic reasoning skills, whereas study abroad may help students develop deeper awareness of other cultures and backgrounds. Among the six HIPs that survey respondents are asked about in NSSE, three relate to experiences that explicitly extend to communities beyond the campus: namely, study abroad, which extends to other cultures and geographies; internships, which extend into the world of work; and service learning which by definition involves a community-based project. The other three HIPs—learning communities, research with faculty, and culminating senior experiences—may also include engagement beyond campus; however, in general, they emphasize on-campus engagement with other students and faculty, and they focus on the integration of campus-based learning.

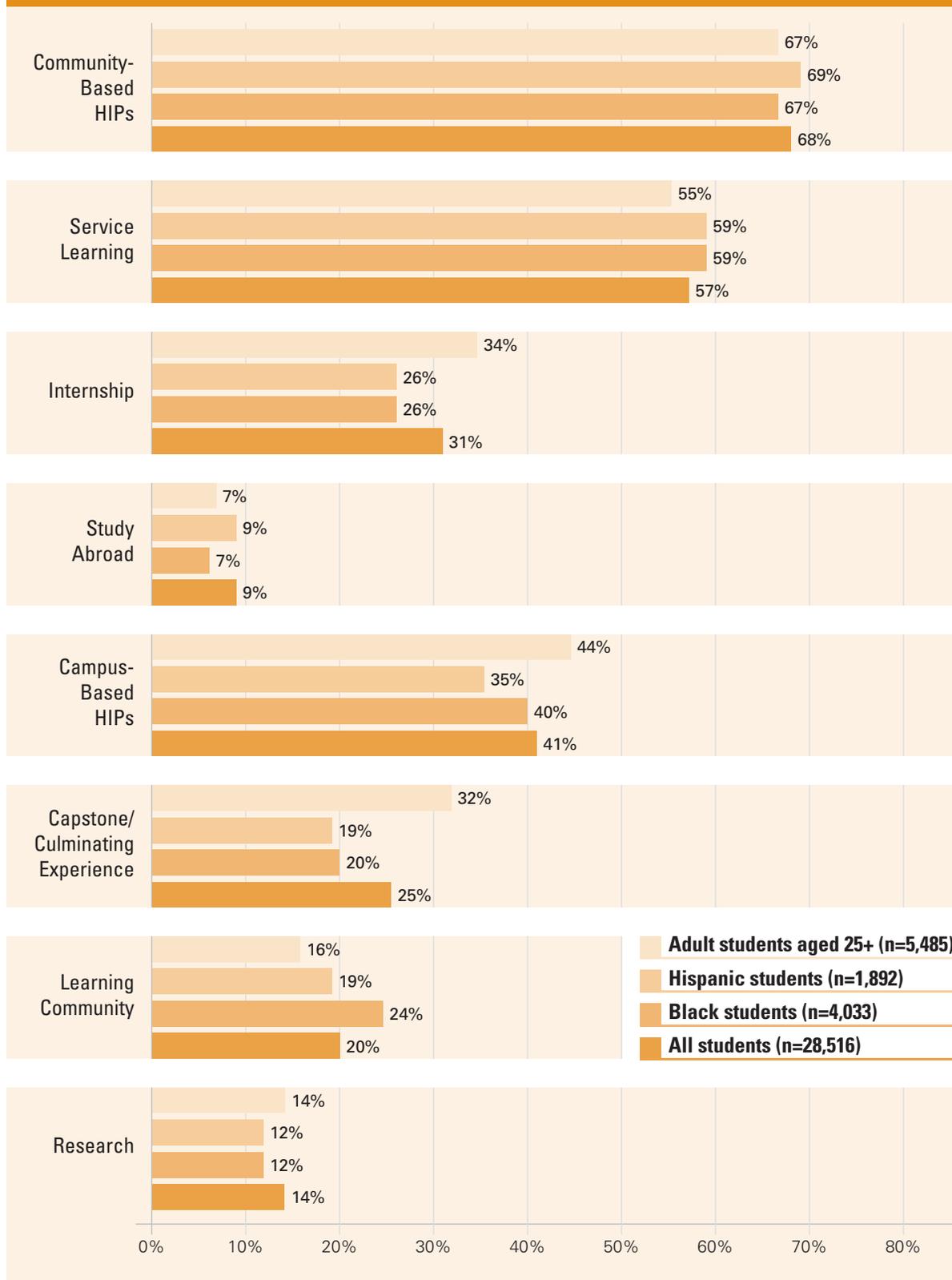
In order to explore the extent to which these two types of HIPs may differentially affect student learning, two “meta-HIP” measures were created for this analysis: **campus-based HIPs** represent participation in learning communities, research with faculty, or a culminating experience, whereas **community-based HIPs** include participation in an internship, a service-learning course involving a community-based project, or study abroad (see Figure 1).⁸

Figure 2 presents students’ self-reported participation rates in each HIP category as well as in each individual HIP for the sample of 15 institutions. Overall, more than two-thirds of students in these institutions report participating in at least one community-based HIP (68 percent), which is driven by high participation rates in service learning (57 percent), moderate participation in internships (31 percent),

Figure 1: **Authors’ Categorization of High-Impact Practices Included in NSSE**

Campus-Based HIPs	<ul style="list-style-type: none"> Learning Communities Research with Faculty Culminating Senior Experience or Capstone
Community-Based HIPs	<ul style="list-style-type: none"> Service-Learning Courses Involving a Community-Based Project Internship or Field Experience Study Abroad

Figure 2: HIP Participation Rates



and lower participation in study abroad (9 percent). Campus-based HIPs are experienced by more than 40 percent of students, with highest participation in culminating senior experience or capstone (25 percent), followed by learning community (20 percent) and research with faculty (14 percent).

Some differences in participation patterns emerge when examining HIP participation by students' race, ethnicity, and age. Among community-based HIPs, Black and Hispanic students have slightly higher participation rates in service learning compared to the full sample, whereas these students are less likely to participate in internships. Students 25 or older exhibit the opposite pattern: They participate in service learning at slightly lower rates compared to the full sample, and they participate in internships at higher rates.

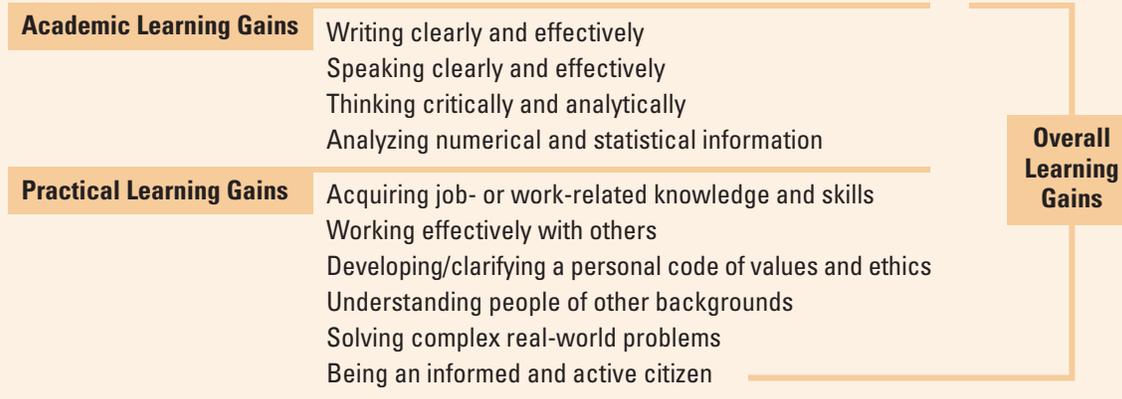
Although participation in study abroad is relatively low among all student groups, Black students and students 25 and older participate in this HIP at lower rates compared to the full sample. Among campus-based HIPs, students 25 and older are more likely to participate in a culminating senior experience or capstone; in contrast, participation rates in culminating senior experiences by both Black and Hispanic students are lower compared with the overall sample. Black and Hispanic students also participate in research with faculty at slightly lower rates than the full student sample. Finally, Black students in the sample participate in learning communities at higher rates, and students 25 and older do so at lower rates compared to the full sample; Hispanic students' participation rates in learning communities are comparable to that of the full sample.

Measures of Gains in Student Learning

In addition to questions on HIP participation, NSSE also asks respondents to assess the extent to which their college experience contributed to their knowledge, skills, and personal development in a variety of domains, including those that are more academic in nature as well as those that are more practical in nature or related to personal or social development. In total, the survey asks respondents to answer 10 questions related to perceived gains.⁹ These questions were used to create three primary outcome measures for the analysis: **overall learning gains**, **academic learning gains**, and **practical learning gains** (see Figure 3). Each of the three scale measures averages students' reported scores across the relevant learning gains items.¹⁰

Figure 3: Authors' Categorization of Learning Gains into Academic and Practical Domains

NSSE asks student respondents to assess the extent to which their experience at the institution contributed to their knowledge, skills, and personal development in 10 areas. For each area, students rate their perceived gains on a four-point scale (very little, some, quite a bit, very much).



Estimation Strategy

To estimate the relationship between HIP participation and perceived learning gains, a series of ordinary least squares (OLS) regressions were conducted in which each of the three perceived learning gains scales (overall, academic, practical) were regressed on indicators of HIP participation. This included both models in which all individual HIPs are included as explanatory variables, and models in which the two “meta-HIPs” (campus-based HIPs and community-based HIPs) are included as explanatory variables. All regressions control for factors that are potentially associated with both participation in HIPs and with perceived learning gains, which could bias the association between the two, including students’ race and ethnicity, gender, age, class (freshmen vs. senior), first-generation student status, and transfer status.¹¹

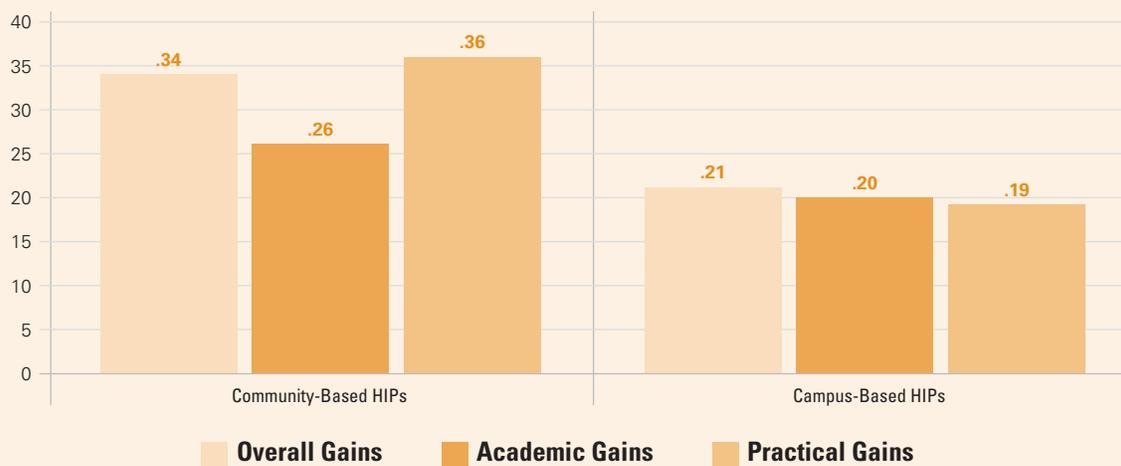
For all analyses, perceived learning gains scales are mean-centered and standardized (i.e., subtracted the mean value and divided by the standard deviation) such that each scale has a mean of zero and standard deviation of one. The resulting coefficients from each of the models can therefore be interpreted as standard deviation differences or effect sizes.¹²

Results

All Students

The estimated associations between participation in community-based or campus-based HIPs and perceived learning gains are summarized in Figure 4a, and the estimated associations between participation in each of the six individual HIPs and perceived learning gains are summarized in Figure 4b. The bars in the figures represent the estimated relationship between a given HIP (or HIP type) and each of the three perceived learning gains scales (overall learning gains scale, academic gains scale,

Figure 4a: “Boost” to Learning Gains from Participation in Community-Based and Campus-Based HIPs



n=28,516. All coefficients are statistically significant at $p < .10$.

All results are from OLS regression models that control for student-level characteristics as well as institution-year fixed effects.

practical gains scale), which derive from regression models run on each learning gains scale separately. The associations are in standard deviation units, as described above.

Overall results suggest that students’ participation in both campus-based and community-based HIPs is strongly correlated with perceived learning gains.

As shown in Figure 4a, student participation in both community-based HIPs and campus-based HIPs is positively and significantly associated with all three learning gains scales: overall learning, academic learning, and practical learning. Across the three scales, participation in HIPs is correlated with an increase in learning ranging from 19 percent to 36 percent of a standard deviation.

Community-based HIPs are more strongly connected with students’ practical learning gains, whereas two of three campus-based HIPs are more strongly associated with academic gains.

As shown in Figure 4a, students participating in community-based HIPs report larger increases in their practical learning (medium-color bars) compared to their academic learning (darkest bars). This pattern holds for all three community-based HIPs of service learning, internships, and study abroad, as illustrated in Figure 4b. By comparison, participation in campus-based HIPs is correlated with roughly equivalent increases in both academic and practical learning gains (Figure 4a), though this pattern varies among the three HIPs of this type. Specifically, as shown in Figure 4b, the campus-based HIPs of research with faculty and culminating senior experience or capstone are more strongly associated with academic learning gains, whereas participation in learning communities is associated with a larger boost to practical learning gains, a finding more consistent with community-based HIPs.

Figure 4b: “Boost” to Learning Gains from Participation in Each Individual HIP

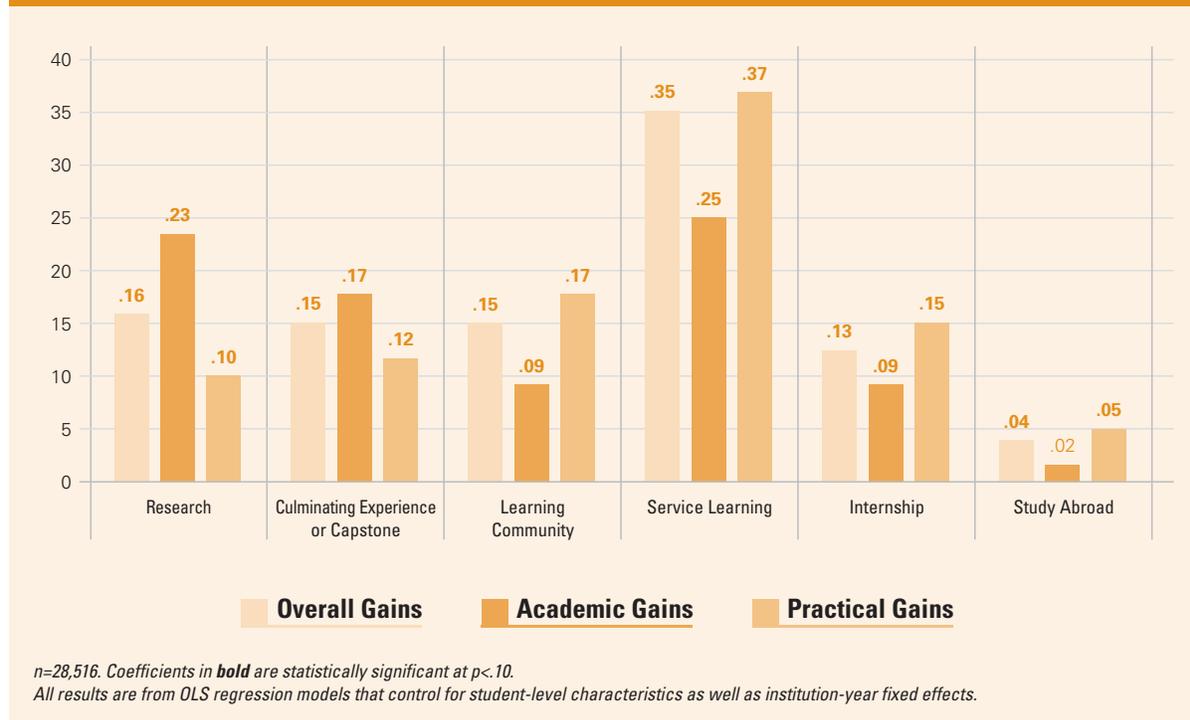


Table 2: “Boost” to Learning Gains from Participation in Individual HIPs for Black Students, Hispanic Students, and Students 25 and Older

	BLACK STUDENTS			HISPANIC STUDENTS			STUDENTS 25+		
	Gains			Gains			Gains		
	Overall	Academic	Practical	Overall	Academic	Practical	Overall	Academic	Practical
Research	0.14	0.15	0.12	0.15	0.27	0.05	0.08	0.15	0.02
Culminating Experience/ Capstone	0.13	0.12	0.12	0.25	0.20	0.24	0.17	0.20	0.14
Learning Community	0.16	0.11	0.17	0.13	0.10	0.14	0.19	0.12	0.22
Service-Learning	0.30	0.22	0.32	0.37	0.24	0.42	0.45	0.33	0.46
Internship	0.20	0.15	0.21	-0.00	-0.05	0.03	0.11	0.05	0.14
Study Abroad	-0.00	-0.03	0.02	0.13	0.14	0.12	0.02	0.01	0.03

*n=4,033 (Black Students), n=1,892 (Hispanic Students), n=5,485 (Adults 25+), Coefficients in **bold** are statistically significant at $p < .10$. All results are from OLS regression models that control for student-level characteristics and institution-year fixed effects.*

Service learning and research with faculty are associated with the most notable overall “boosts” in learning gains.

As shown in Figure 4b, with the exception of study abroad, participation in each of the six HIPs is associated with positive and statistically significant increases in all three learning gains scales (overall gains, academic gains, practical gains). Among the six HIPs measured by NSSE, service learning with a community-based project is the HIP that confers the largest boost to student learning in terms of both academic and practical learning gains. This is notable given that more students participate in service learning than in any other HIP, both in these data (see Figure 2) and in national NSSE data. In addition, students engaging in research with faculty report notable gains in their academic learning.

Black Students, Hispanic Students, and Students 25 and Older

A key goal of the Lumina-NASH HIPs initiative was to better understand and measure the extent to which student learning from HIPs occurs equitably. In addition to exploring relationships between HIP participation and learning gains for the full student sample, separate regressions were conducted for Black students, Hispanic students, and students 25 years and older.¹³ For these students, Figure 5 displays the “boost” to learning gains associated with participation in community-based HIPs or campus-based HIPs as categories, and Table 2 summarizes the relationship between learning gains and participation in each individual HIP for these student groups.

Black students, Hispanic students, and students 25 and older who participate in HIPs experience overall positive, significant gains in their self-reported learning.

Similar to results for all students, Figure 5 points to statistically significant gains in learning for Black students, Hispanic students, and students 25 and older who participate in both community-based and campus-based HIPs. These results support earlier studies pointing to generally positive benefits of HIPs for minoritized and underserved student groups in higher education.

Learning gains for Black and Hispanic students who participated in community-based HIPs are large and driven by service learning. Black students also experience notable benefits from participation in internships, and Hispanic students from study abroad.

Black and Hispanic students engaging in community-based HIPs report notable increases in learning gains, especially practical learning gains. However, there is considerable variation in patterns for Black and Hispanic students among the three community-based HIPs. Specifically, Black students in this study have an especially large “boost” to learning gains from participation in internships but do not have statistically detectable learning gains associated with study abroad experiences. In contrast, Hispanic students in this sample report notable gains from study abroad yet do not appear to have learning gains from internships. Both Black and Hispanic students reap large learning gains from participation in service learning.

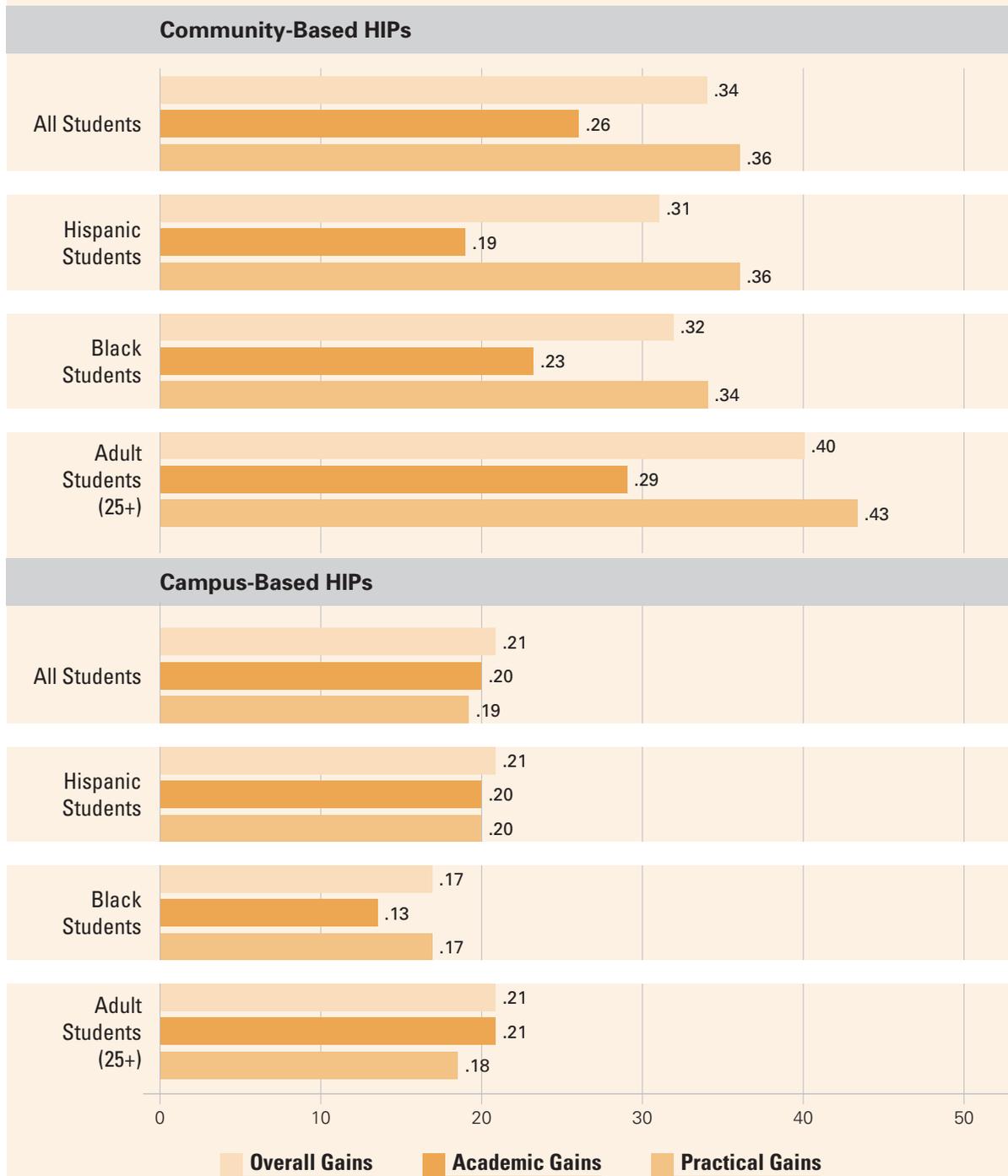
Students 25 and older report large learning gains associated with participation in community-based HIPs, particularly in terms of practical learning.

Students 25 and older who engage in community-based HIPs experience significant gains in both academic and practical learning. This is driven by a notably larger association among these adult students between service-learning participation and self-reported gains. Older students also benefit from internships though do not report learning gains from study abroad.

Black students, Hispanic students, and students 25 and older who participated in campus-based HIPs also reported increased overall, academic, and practical learning gains; however, academic gains associated with research with faculty varied among these student groups.

As shown in Figure 5, Hispanic students report strong overall, practical, and academic learning gains from participation in campus-based HIPs. Focusing on academic gains, Hispanic students experience an especially large boost from both research with faculty and culminating senior experiences. Black students and older students also benefit from campus-based HIPs, reporting positive and significant gains from all three HIPs, with the largest overall learning gains from learning communities. However, compared to Hispanic students (and compared to all students), Black students and students 25 and older in our sample experience a relatively lower boost to academic learning gains from participation in research with faculty.

Figure 5: “Boost” to Learning Gains from Participation in Community-Based and Campus-Based HIPs for Black Students, Hispanic Students, and Students 25 and Older



n=28,516 (All Students), *n*=4,033 (Black Students), *n*=1,892 (Hispanic Students), *n*=5,485 (Adults 25+). All coefficients are statistically significant at *p*<.10. All results are from OLS regression models that control for student-level characteristics and institution-year fixed effects.

Conclusion:

This analysis reinforces prior research underscoring the educational benefits of high-impact practices. It also extends the evidence base by illuminating variation in these relationships both in terms of HIP type as well as in the nature of the learning gains associated with HIP participation.

Results show that participation in community-based HIPs—defined as HIPs that explicitly extend to communities beyond the campus—correlates strongly with students' overall, academic, and practical learning gains, and that practical learning gains are especially large for students experiencing these types of HIPs. Similarly, campus-based HIPs as a category are connected with positive overall, academic, and practical learning gains, though not as pronounced as the reported learning gains from community-based HIPs. Reported learning gains associated with both community-based and campus-based HIPs are large and significant for all students, as well as for Black students, Hispanic students, and students 25 years and older. These results reinforce the importance of institutional and system efforts to continue equitable expansion of both HIP types.

Further examination of these relationships for individual HIPs points to larger returns to some HIPs and lower returns to others, and to variation in these relationships for Black, Hispanic, and older students. Among community-based HIPs, service learning—which is experienced by a majority of students in this sample and across four-year colleges nationwide—is connected with large and significant learning gains across all student groups—with particularly large benefits for students 25 and older.

In contrast, study abroad is the HIP least consistently associated with learning gains; however, Hispanic students in our sample appear to derive substantively meaningful benefits from these experiences. Black students report notable gains from internships compared to all students and to other student groups in this analysis. Among campus-based HIPs, participation in learning communities, research with faculty, and culminating senior experiences yield overall learning gains for all students. However, evidence from this sample suggests that the boost to academic learning gains from research with faculty may not be experienced equitably by Black students and students 25 and older.

These results reinforce the importance of institutional and system efforts to continue equitable expansion of HIPs.

Although these findings related to HIPs are specific to the set of 15 institutions included in the analysis, they carry broader practical implications for the equitable, quality-conscious implementation of high-impact practices. For example, our finding that Black students have relatively weaker correlations between participation in research with faculty and gains in their academic learning supports prior research suggesting that key aspects of this HIP need to be strengthened for Black students. Specifically, prior research shows that Black students are less likely than other students to associate their experiences in faculty-assisted research with effective teaching practices and with a supportive environment.¹⁴ Moreover, our overall finding of a relatively weak association between participation in study abroad and students' perceived learning gains points to the importance of ensuring that study abroad programs incorporate standards for good practice and are designed to offer students high-quality international experiences.¹⁵ Study abroad professionals can develop taxonomies, such as those developed by IUPUI's Study Abroad office, that aim to identify and measure key attributes deemed essential for maximizing the overseas experience to enhance students' intercultural learning.¹⁶

Endnotes

¹ Kuh, George D. (2008). *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Washington, DC: Association of American Colleges and Universities.

² See <https://www.aacu.org/node/4084>
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⁴ Finley, A. & McNair, T. (2013). *Assessing Underserved Students' Engagement in High-Impact Practices*. Washington, DC: Association of American Colleges and Universities.

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⁵ Patton L. D., Harper S. R., Harris J. (2015). Using critical race theory to (re)interpret widely-studied topics related to students in U.S. higher education. In A. M. Martínez Alemán, E. M. Bensimon, & B. Pusser (Eds.), *Critical approaches to the study of higher education* (pp. 193-219). Baltimore: Johns Hopkins University Press.

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⁶ The analytic sample is restricted to students answering all survey questions on HIP participation and perceived learning gains, and that have no missing data on key student-level characteristics presented in Table 1.

⁷ For service learning, participation is determined as positive if students responded "sometimes", "often" or "very often" to the question, "About how many of your courses at this institution have included a community-based project (e.g. service learning)?" For the remaining five HIPs, respondents were asked "Which of the following have you done or do you plan to do before you graduate from your institution?" For these practices, participation is determined if students responded, "Done or in progress."

⁸ Of course, some of the HIPs in the *Campus-Based HIPs* category may entail an outside-of-school component,

such as research with faculty; and some of the *Community-Based HIPs* are connected to campus-based activities, such as a service-learning course.

⁹ In 2013, NSSE made changes to the series of questions asked of respondents about perceived learning gains. Results from this analysis therefore cannot be directly compared to results from prior analyses of learning gains based on earlier administrations.

¹⁰ Factor analysis provided support for this approach to grouping the 10 perceived gains items into two constructs, which we label Academic Learning Gains and Practical Learning Gains.

¹¹ Regressions of learning gains on any individual HIP control for participation in the other five HIPs. Regressions of learning gains on campus-based HIPs control for participation in community-based HIPs, and vice versa. HIP category measures (community-based HIPs and campus-based HIPs) reflect participation in at least one HIP of that category and do not account for dosage. In all models, in addition to student-level controls we include an institution year fixed effect to account for unobserved differences across colleges that may be associated with HIP uptake or perceived learning gains.

¹² Some scholars have recommended that effect sizes of 0.20 standard deviation units or higher should be considered policy relevant.

Kraft, MA. (2020). Interpreting Effect Sizes of Education Interventions. *Educational Researcher*, 49 (4) :241-253.

Bloom, H. S., Hill, C. J., Black, A. R., & Lipsey, M. W. (2008). Performance trajectories and performance gaps as achievement effect-size benchmarks for educational interventions. *Journal of Research on Educational Effectiveness*, 1(4), 289-328.

¹³ Due to sample size limitations, relationships between HIP participation and learning gains cannot be estimated for American Indian students.

¹⁴ Zilvinskis, J. (2019) Measuring Quality in High-Impact Practices. *Higher Education*, 78: 687-709.

¹⁵ The Forum on Education Abroad. (2015). *Standards of Good Practice for Education Abroad*, 5th Edition. Retrieved from <https://forumea.org/resources/standards-of-good-practice/>

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